

**NATURAL and CULTURAL
RESOURCES MANAGEMENT PROGRAM**

TUMACACORI
National Monument/Arizona

~~**December 1982 Revision**~~

Reviewed & still current as of December 1983

NATURAL AND CULTURAL RESOURCES
MANAGEMENT PROGRAM

DECEMBER 1982 REVISION

AN ADDENDUM TO THE
NATURAL AND CULTURAL RESOURCES MANAGEMENT PLAN
FOR
TUMACACORI NATIONAL MONUMENT
ARIZONA

Prepared by
TUMACACORI NATIONAL MONUMENT
NATIONAL PARK SERVICE
DEPARTMENT OF THE INTERIOR



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SUMMARY

NATURAL AND CULTURAL RESOURCES MANAGEMENT PROGRAM

DECEMBER 1982 REVISION

A Service-team completed a Natural and Cultural Resources Management Plan (N/CRMP) for Tumacacori National Monument in November 1976. The Superintendent and staff worked with a team under the direction of Dr. Milton C. Kolipinski, Western Region Office and in primary consultation with Dr. Keith Anderson and other specialists from the Western Archeological Center. That N/CRMP included an addendum, the Management Program. The Management Program was revised in December 1980.

This December 1982 edition represents the second revision of the original Management Program. The following items comprise this revision:

1. Cultural and Natural Resources Projects Programming Summary Sheet (revised December 1982) listing each project's priority, requested funds, and work schedule for a five-year period.
2. Status List of Resources Projects.
3. An Added Narrative Statement on Water Quality in the Monument.
4. Cultural Resources Overview and Needs.
5. Comments on Air Quality.
6. Project Statements.

The Management Program proposes projects for fiscal years 1983 through 1987. The Management Program will be revised and updated for a new five-year period as work is completed and new projects are proposed.

It was determined through public and National Park Service review of the 1976 N/CRMP, Environmental Assessment, and Management Program that proposed actions lacked potential to cause significant impacts on the human environment. In carrying out projects proposed in this 1982 revision of the Management Program, provisions of the National Environmental Policy Act, National Historic Preservation Act, and Endangered Species Act will be complied with as they have been in the past. Because projects in this document were considered in the 1976 Environmental Assessment, no further consultation and/or documentation of environmental impacts is necessary prior to project implementation.

John L. Sewer

Superintendent, Tumacacori National Monument

12/16/82

Date

John V. Clark

General Superintendent, Southern Arizona Group

1/3/83

Date

Harold H. Chapman

Regional Director, Western Region

3/14/83

Date

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TUMACACORI NATIONAL MONUMENT

Increase or Pkg. No.	Area Pri- ority	Refer- ence No.	Project Title	NPS Costs Expressed in \$1000					Signi- ficant Resource Problem			Basic Opera- tions
				Yr 1 (83) BASE* NEW*	Yr 2 (84) BASE NEW	Yr 3 (85) BASE NEW	Yr 4 (86) BASE NEW	Yr 5 (87) BASE NEW	10- 237	10- 238	10- 239	
800	1	RM-1	Animal Control	1.56	1.72	1.85	2.03	2.23				
	2	RM-2	Vegetation Maintenance	2.04	2.24	2.46	2.71	2.98				
801	3	H-2	Agricultural Study							10/76		
	4	H-4	Social Structure Study							10/76		
802	5	H-3	Communications & Trade Study							10/76		

*BASE Funds in park base.

*NEW Funds requested from Western Regional Office.

STATUS LIST OF RESOURCES PROJECT

Reference Number	Project Title	Status of Project
H-1	Mission Church Preservation	1 year to completion
H-2	Agricultural Study	Still unfunded
H-3	Communications and Trade Study	Still unfunded
H-4	Social Structure Study	Still unfunded
RM-1	Animal Control	As needed
RM-2	Vegetation Maintenance	As needed

CULTURAL RESOURCES OVERVIEW AND NEEDS

Beginning with an extensive archeological excavation in 1934-35, the subsurface ruins have been explored, but poorly documented until about 1970. However, recent salvage archeology associated with the historic structures stabilization project has shown much remains to be learned from areas thought to have been damaged by early treasure hunters. An additional 5.86 acres were added to the monument in 1979. A surface survey of this property indicates deep plowing associated with farming activities has likely disturbed the provenience and thus the value of any remaining cultural resources. An excellent paper, "Archeological Assessment and Management Recommendations," prepared by Fratt in 1981 does much to place the subsurface resources in proper perspective.

The historic structures may well be in better condition today than any time since 1921 when Frank Pinkley completed the initial rebuilding and restoration of the mission church. A multi-disciplinary stabilization project which included considerable basic research on building materials by the National Bureau of Standards and others was begun in 1976. This \$450,000 project also funded extensive repair and minor restoration work. The primary goal of the project was to eliminate moisture from the adobe walls, and remove all Portland cement which was trapping moisture in the adobe. Several studies are continuing such as: monitoring the structural integrity of the church, test wall weathering, and monitoring of moisture in adobe walls, foundations and fill with the use of sophisticated instrumentation. An additional \$4,000 have been added to the area's operating base to meet increased costs of historic structures maintenance. The stabilization project will be completed in August 1983 when interior paint and plaster is to be treated under the direction of a conservator from ICCROM's Rome center for cultural resource conservation.

The list of classified structures has been up-dated to include the visitor center and one residence. Minor repairs identified during the survey have been completed.

Except for those items on display in the museum, nearly all collections have been moved to the WACC for proper storage. The collections statement is current, as is the museum catalogue.

A Historic Structures Report and Preservation Guide are nearing completion at the Denver Service Center. A stabilization specialist from the WACC will assist the area in an annual inspection and follow up maintenance.

Three socio-cultural studies have been identified which would add significant details to the interpretive base of the mission complex. The 10-238s are long-standing, and a better source for funding may be our cooperating association (SPMA).

The General Management Plan identifies the need to acquire a small parcel of land outside the present boundary on a willing seller/buyer basis. This parcel contains faint surface ruins of the original mission garden wall.

In summary, the cultural resources are in good condition and are being properly maintained. With the exception of unpredictable natural phenomena such as an earthquake, area maintenance forces with assistance from the WACC will be able to properly maintain the historic resource to prescribed standards.

NATURAL RESOURCES OVERVIEW AND NEEDS

WATER RESOURCES NARRATIVE STATEMENT

This sixteen-acre monument contains no streams, lakes or wet lands. The terrain is nearly flat with only four meters difference in elevation as the land gently slopes from west to east. However, the monument is located only 900 meters from the Santa Cruz River, just above the flood plain. All potable water comes from a single well which is 46 meters deep.

Although we are rightly concerned about water quality, another obvious concern in the upper Sonoran desert environment is water quantity. In fact, the availability of water will likely be the single most limiting factor in the growth of this area in the next several decades.

Over-grazing of cattle on marginal federal, state, and private lands has contributed to increased water runoff during summer storms. Increased runoff is also accelerated by the loss of natural ground cover as paved roads, houses, parking lots, etc. continue to encroach on the 55,000 acre Rio Rico development which extends for twelve miles along the Santa Cruz River east and south of this monument.

Many hydrologists believe these factors have contributed to the increased frequency of flooding on the Santa Cruz River in the last fifteen years. Although the monument has never been threatened with inundation, there is a potential threat of ground water contamination as the Nogales sewage treatment plant is only eight miles upstream.

In October, 1977, a meter-wide sewer main at the treatment plant was washed out and raw sewage poured into the river for two weeks before repairs could be made. Monument well water was not used for drinking purposes during this period until several bacteriological tests could be made.

During the summer of 1949 and 1981, unusually heavy rains resulted in flooding of the monument grounds from the west as an arroyo overflowed. In both instances, water entered the visitor center lobby door and covered the floor. The flooding in 1949 left thirty centimeters of water on the basement floor and damaged the furnace.

With installation of a new water system in 1968 the quality and dependability of the monument's water supply was greatly improved. The new system included a new forty-six meter deep well, a 180,000 liter concrete reservoir, three new pumps, and a new distribution system. This system serves about 60,000 visitors annually and three families residing on the monument. Of the six million liters of water pumped each year, two thirds go for irrigation purposes. All water is chlorinated. The static water level of the aquifer underlying the monument is generally three to four meters below the land surface. This level is being monitored at three sites on the monument by the Service and the State of Arizona. All three wells (two inactive) were registered with the state in May, 1982.

A review of bacterial analysis of water samples (168 during the past seven years), shows there have never been two consecutive bad samples. The last

detailed chemical analysis was done in 1980. All primary drinking-water regulations were met.

The monument's sewer system was rehabilitated in 1976. A failing leach field was replaced with a new evapotranspiration system. A single 3,800 liter septic tank was not able to handle the entire system, so an abandoned 12,000 liter septic tank was rehabilitated and placed back in service.

Management will continue to monitor the depth of the water table and the quality of ground water as outlined in this narrative. Employees will be alert to possible sources of external contamination such as the 1978 flooding. Chlorination of the system and bi-monthly bacterial analysis will continue with immediate repeat sampling if a bad sample is detected.

AIR QUALITY NARRATIVE STATEMENT

This statement considers existing and potential impacts of deteriorating air quality on the monument's resources. It concludes with proposed objectives and actions to mitigate this external threat to the monument. A Project Statement will be prepared in the next revision of the Management Program.

I. The Significance of Park Resources - Air Quality Related Values

A. The importance of air quality to the monument

On this sixteen acre site there are obviously no panoramic vistas, but maintenance of air quality is essential in enhancing the visitor's experience.

The most important vista on the monument is from the "view room" containing a model of the mission community structures. Visitors standing around this model are afforded a dramatic view of the Franciscan church 200 feet to the north through the arched opening on the north wall of the "view room".

There have been a few days during the past year when strong east winds have carried sand and silt from the Santa Cruz River bed 0.5 miles to the east on to the monument scene. Not only is visibility reduced, these fine particles could be carried into the visitors eyes with unpleasant irritating results.

Wind-borne dust tends to settle on the walls of the historic structures, and over a long period of time, may have a minor deteriorating effect on the remaining original plaster.

B. Ambient air quality - existing and historic

Visibility in this general area has been and continues to be good. The exceptions have been during the last two years and are related to extensive flooding of the Santa Cruz River. Since the fall of 1977 when the river flooded extensive areas from Nogales to north of Tucson, the river has widened six fold in many areas. Large amounts of water-borne silt and fine sand were left in the greatly expanded river bed. When the wind blows in excess of 35-40 mph, these fine materials are carried as high as 500 feet into the air. Fortunately for the monument, the prevailing winds are from the south and southwest. As a result, only a few days during the year is this material carried into the monument's corridor. However, there are days when the vistas of the foothills of the Santa Rita Mountains to the east are partially obscured by these river bed dust storms.

Until 1968, trash was burned on-site. When this practice was discontinued and all refuse was hauled to the Tubac landfill, a major on-site source of air pollution was eliminated.

The two residential fireplaces, two oil-fired and four LPG furnaces, which are operated from November through March are the only on-site sources of air pollutants. The fireplaces and furnaces are responsible for emitting small amounts of particulate matter, carbon monoxide, nitrogen oxides, and

sulfur dioxide into the monument's air. Because of the diluted state of these pollutants and lack of air stagnation, these factors do not have a significant effect on the area's air quality.

II. Influences on Management - Air Quality Related Values

A. Legislative and Administrative Constraints

The Clean Air Act as amended in 1977 was established by Congress after determination that the nation's air quality was rapidly deteriorating, and that Federal leadership and financial assistance were needed to cope with the problem. The stated purpose of the Act is to protect and enhance the nation's air quality. The primary Federal responsibility is to provide technical and financial assistance to State and local governments, who have the responsibility to develop and execute air pollution prevention and control programs.

Section 118 of the Act indicates that all Federal facilities must comply with all Federal, state, interstate, and local requirements in the same manner and to the same extent as any nongovernmental entity.

Part C of the Clean Air Act is entitled "Prevention of Significant Deterioration of Air Quality". Among the stated purposes of this part is "to preserve, protect, and enhance the air quality in national parks, national wilderness areas, national monuments, national seashores, and other areas of special national or regional natural, recreational, scenic, or historic value".

As part of this preservation effort, the Clean Air Act created three classifications of varying degrees of restriction of allowable air quality deterioration. Under the terms of this classification Tumacacori National Monument was designated Class II and will not be recommended for upgrading to Class I status in the near future, as a review of the area has not identified air quality related values of sufficient importance to require protection beyond that afforded by Class II status in order to realize the purpose for which the area was set aside. Under the Class II designation, the maximum allowable increase of particulate matter and sulfur dioxide has been established as follows:

Pollutant

Particulate matter:

Maximum allowable increase
(micrograms per cubic meter)

Annual geometric mean	.19
Twenty-four-hour maximum	.37

Sulfur dioxide:

Annual arithmetic mean	.20
Twenty-four-hour maximum	.91
Three-hour maximum	512

Increments of deterioration for other pollutants, including carbon monoxide, photochemical oxidants, and nitrogen oxides are to be established by the

Environmental Protection Agency and are scheduled to become effective by August, 1980.

The State of Arizona has designated all Santa Cruz County for Class II Attainment status. There are no serious pollution sources which would require abatement in order to attain Class II status for the county.

B. Regional Influences

The infrequent visibility problem resulting from the expanded Santa Cruz River bed has been addressed. Another, more distant and less frequent source of particulate matter which can adversely affect visibility are the open pit copper mines north of Green Valley. After the ore has been processed the remaining materials are carried by conveyor belts to the top of enormous piles surrounding the processing plant. When the wind velocity exceeds 35-40 mph, these materials are carried into the air corridor for miles in a direction and to a distance depending on the direction and velocity of the wind. Attempts by the mining companies to establish control through vegetation and wetting have been minimally successful.

There are times when air inversion causes a pall of smoke and other particulates over the many square miles of greater Tucson. Only very infrequently would either of these sources have an adverse effect on this area's air quality. Only when the wind blows with a sustained velocity of 30+ mph from the north for several days does the visibility in this general area deteriorate. Because of the distance involved, twenty-six miles to the mines and fifty miles to Tucson, and the few times a year the wind blows hard enough and long enough from the north, these sources are not considered significant to adversely affect the resource.

Because of the prevailing wind direction out of the south and southwest any appreciable source of air pollution between the monument and Nogales, which is nineteen miles south, would have a detrimental effect on air quality. Most of the industry in Nogales is virtually free of serious air pollution problems and is currently dominated by assembly plants for components manufactured elsewhere.

The Rio Rico Development Corporation continues to make capital investments on a 55,000 acre tract east and south of the monument. As the area begins to grow with the population center eight miles directly to the south, the potential threat to the monument's air quality will increase. The deteriorating effect will be gradual and minor because the entire area has residential zoning except for the shopping center which will also expand as more lot owners begin to build on this property.

Farmers and ranchers occasionally burn off their fields, but this is not considered a significant contribution to decreased air quality.

Unless the monument's air quality should deteriorate considerably which could happen over an extended period of time as this area continues to grow as a population center, there would be no adverse effects on the natural or cultural resources. Any appreciable increases in toxic air borne pollutants could have an adverse effect on the remaining original interior plaster and painted decorations on the mission church.

III. Management Objectives - Air Quality Related Values

Maintenance of Class II designation within Santa Cruz County should assure a level of visibility and resource protection which is acceptable to management and the visitor. Management will have a continuing responsibility to monitor planned activities within the county which could have any negative effect on the air quality of the monument.

IV. Outline of Planning Requirements Summary

Because of the small size of this monument (10 acres; 18 acres as per the Omnibus Bill) air quality is obviously influenced in a large part by factors in the region. Management will take advantage of any monitoring done in the area by the EPA or state and county air pollution control agencies. Baseline data will be counted as part of the current stabilization project. These figures will be entered in the cultural and natural resources management plan when they are available. Also as a part of the stabilization project, conservators will make a recommendation concerning the potential threat to remaining original plaster and paint from appreciable increases in toxic air pollutants. If these identifiable pollutants are shown to increase in the future, more specific research could then be started.

PROJECT
STATEMENTS

NATURAL RESOURCES PROJECT STATEMENT

1. PARK AND REGION: Tumacacori National Monument, Southern Arizona Group, Western Region.
2. PROJECT NAME AND NUMBER: Animal Control (TUMA-RM-1).
3. STATEMENT OF PROBLEM:
 - a. Burrowing animals cause structural damage to archeological ruins and subsurface remains.
 - b. Burrows accelerate soil erosion problems.
 - c. Boring insects damage original structural woodwork.
 - d. Bats cause interior damage to plaster and painted walls.
 - e. A few animals may be hazardous to the health and safety of the park visitor.
4. WHAT HAS BEEN DONE:
 - a. Some control measures have been used on burrowing mammals:
 - 1) live-trapping
 - 2) sulfur bombs
 - 3) treated bait.
 - b. Church windows and doors have been screened or otherwise closed to eliminate entrance of bats.
 - c. Professional termite fumigation techniques.
5. DESCRIPTION OF WORK TO BE UNDERTAKEN:
 - a. When feasible, live-trap rock squirrels and pocket gophers with removal from sites where potential damage may occur to standing and subsurface ruins, or cultivated plant species in the formal garden.
 - b. When live-trapping of pocket gophers is not successful, they will be controlled through use of snap-traps.
 - c. Termite control in historic wood will be maintained through use of pentachlorophenol or similar chemical.
 - d. Professional treatment of original woodwork in historic structures will be used to aid control of termites when necessary.
 - e. Species potentially hazardous to the health and safety of park visitors (especially black widow spiders) will be eliminated from high visitor use areas.

6. LENGTH OF TIME NEEDED: Continuous.
7. WHAT WILL HAPPEN IF NOT UNDERTAKEN:
 - a. Gradual soil erosion.
 - b. Deterioration of historic resources.
 - c. Potential hazards to visitors.
8. WHAT ARE THE ALTERNATIVES:
 - a. No action.
 - b. Use of other residual poisons.
9. PERSONNEL: Maintenance staff.
10. ADMINISTRATION AND LOGISTICS:

Funded from ONPS base

<u>Funding</u>	<u>Year in Program Sequence</u>				
	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>	<u>5th</u>
GRAND TOTAL:	1,560	1,720	1,850	2,030	2,230
Funds available in park base:	1,560	1,720	1,850	2,030	2,230
Funds requested from Regional Office:	0	0	0	0	0

On Form

Date Submitted

Annually

11. MANAGEMENT AND ASSESSMENT NEEDS: None.
12. REFERENCES AND CONTACTS:

Department of Zoology and Entomolgy; University of Arizona, Tucson, AZ.

U.S. Department of Agricultural; Wildlife Management Specialist.

Arizona Fish and Game Department.
13. DATE OF ORIGINAL SUBMISSION: June 30, 1974.
14. DATE OF THIS REVISION: December 1982.

NATURAL RESOURCES PROJECT STATEMENT

1. PARK AND REGION: Tumacacori National Monument, Southern Arizona Group, Western Region.
2. PROJECT NAME AND NUMBER: Vegetation Maintenance (TUMA-RM-2).
3. STATEMENT OF PROBLEM: Control of grasses in the visitor use area is needed for fire hazard reduction and visual restoration. Removal of trees and large woody plants is necessary to preserve and protect the standing and subsurface historic structures.
4. WHAT HAS BEEN DONE: For the past 56 years the monument has pursued a program of routine mowing of grass in specified areas; cutting of dying trees to ground level; and sporadic hand pulling of weeds in visitor use areas.
5. DESCRIPTION OF WORK TO BE UNDERTAKEN: In areas known to contain subsurface remains and visible historic structures, trees will be removed and stumps chemically treated. Mowing the grass to a height of four or more inches will be accomplished by hand operated machinery to avoid unnecessary soil compaction. The remaining areas will be mowed and no trees will be removed unless dead or exotic. Aggressive measures will be taken to stop the encroachment on monument lands by the exotic Russian Thistle. Plants will be hoed or hand pulled before reaching seeding maturity.
6. LENGTH OF TIME NEEDED: Continuous.
7. WHAT WILL HAPPEN IF NOT UNDERTAKEN:
 - a. Root damage to subsurface ruins.
 - b. Root damage to foundations of visible historic structures.
 - c. Penetration of PVC sheeting protecting church foundation.
 - d. Visual interference.
 - e. Fire hazards.
8. WHAT ARE THE ALTERNATIVES:
 - a. No action.
 - b. Use of herbicides and soil sterilant.
 - c. Mow entire area.
 - d. Cultivate walled garden as done by the Indians.
 - e. Restore historical irrigation ditch to working order.
9. PERSONNEL: Maintenance staff.

10. ADMINISTRATION AND LOGISTICS:

Funded from ONPS base

<u>Funding</u>	<u>Year in Program Sequence</u>				
	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>	<u>5th</u>
GRAND TOTAL:	2,040	2,240	2,460	2,710	2,980
Funds available in park base:	2,040	2,240	2,460	2,710	2,980
Funds requested from Regional Office:	0	0	0	0	0
<u>On Form</u>					<u>Date Submitted</u>
					Annually

11. MANAGEMENT AND ASSESSMENT NEEDS: None.12. REFERENCES AND CONTACTS:

Ruins Stabilization Unit, Western Archeological Center; Tucson, AZ.

13. DATE OF ORIGINAL SUBMISSION: June 30, 1974.14. DATE OF THIS REVISION: December 1982.

CULTURAL RESOURCES PROJECT STATEMENT

1. PARK AND REGION: Tumacacori National Monument, Southern Arizona Group, Western Region.
2. PROJECT NAME AND NUMBER: Agricultural Study (TUMA-H-2).
3. STATEMENT OF PROBLEMS: A study of agricultural practices to provide interpretive information about life in this mission community. The study would attempt to determine the crops that were grown, the types of trees which comprised the orchard, the techniques and tools that were used in planting and harvesting, water supply and water use, the ways in which the produce was stored, etc. The research would determine what exotic plants were brought into the area during the mission period.
4. WHAT HAS BEEN DONE: Nothing.
5. DESCRIPTION OF WORK TO BE UNDERTAKEN: The project will involve detailed historic and ethnographic research. Information will be presented in report form.
6. LENGTH OF TIME NEEDED: One year.
7. WHAT WILL HAPPEN IF NOT UNDERTAKEN: Failure to implement project would result in a lack of needed interpretive data. A complete and accurate picture of mission life could not be interpreted.
8. WHAT ARE THE ALTERNATIVES: No action.
9. PERSONNEL: The research will be conducted by a professional ethnohistorian from a qualified institution.
10. ADMINISTRATION AND LOGISTICS:

<u>Funding</u>	<u>Year in Program Sequence</u>				
	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>	<u>5th</u>
GRAND TOTAL:	2,500				
Funds available in park base:	0				
Funds requested from Regional Office:	2,500				

<u>On Form</u>	<u>Date Submitted</u>
10-237	October 15, 1976
11. MANAGEMENT AND ASSESSMENT NEEDS: None.
12. REFERENCE AND CONTACTS:

Bernard L. Fontana, PhD; Arizona State Museum, Tucson, AZ.

Rev. Charles Polzer, S.J., PhD; 2844 E. First St., Tucson, AZ.

13. DATE OF ORIGINAL SUBMISSION: June 30, 1974.
14. DATE OF THIS REVISION: December 1982.

CULTURAL RESOURCES PROJECT STATEMENT

1. PARK AND REGION: Tumacacori National Monument, Southern Arizona Group, Western Region.
2. PROJECT NAME AND NUMBER: Communications and Trade Study (TUMA-H-3).
3. STATEMENT OF PROBLEM: A communications and trade study is an area of needed research at Tumacacori. Such a study would add valuable information to the interpretive program and enhance the story told at the monument. This type of information is necessary if a true awareness of Spanish colonial history is to be imparted to the visitor.
4. WHAT HAS BEEN DONE: Nothing.
5. DESCRIPTION OF WORK TO BE UNDERTAKEN: The purpose of the project is to determine the types of communications, trade and supply routes and methods of transportation used by the Spanish colonists in the Pimeria Alta between 1700 and 1821 A.D. Included in the study will be information on sources of supply, items involved, how requests were determined and made, payment, frequency of travel, what special problems were involved and the distribution of articles. Special emphasis will be placed on the Santa Cruz Valley.
6. LENGTH OF TIME NEEDED: One year.
7. WHAT WILL HAPPEN IF NOT UNDERTAKEN: Failure to implement this project would detract from the interpretive program at the monument and deprive the visiting public of a fuller understanding of the complexity of the Spanish colonial frontier.
8. WHAT ARE THE ALTERNATIVES: No action.
9. PERSONNEL: By contract.
10. ADMINISTRATION AND LOGISTICS:

<u>Funding</u>	<u>Year in Program Sequence</u>
	<u>1st</u> <u>2nd</u> <u>3rd</u> <u>4th</u> <u>5th</u>
GRAND TOTAL:	3,500
Funds available in park base:	0
Funds requested from Regional Office:	3,500

On Form
 10-237

Date Submitted
 October 15, 1976
11. MANAGEMENT AND ASSESSMENT NEEDS: None.

12. REFERENCES AND CONTRACTS:

Bernard L. Fontana, PhD; Arizona State Museum, Tucson, AZ.

Rev. Charles Polzer, S.J., PhD; 2844 E. First St., Tucson, AZ.

13. DATE OF ORIGINAL SUBMISSION: June 30, 1974.14. DATE OF THIS REVISION: December 1982.

CULTURAL RESOURCES PROJECT STATEMENT

1. PARK AND REGION: Tumacacori National Monument, Southern Arizona Group, Western Region.
2. PROJECT NAME AND NUMBER: Social Structures Study (TUMA-H-4).
3. STATEMENT OF PROBLEM: Due to lack of information, the visitor is not aware of Spanish colonial influence and especially the role played by the mission community. This study will provide the information needed to help the visitor obtain a better understanding of the history of the area.
4. WHAT HAS BEEN DONE: No complete or detailed work on this subject has ever been done at Tumacacori.
5. DESCRIPTION OF WORK TO BE UNDERTAKEN: The study will attempt to determine the types of interaction among the native inhabitants, colonists, military and mission community residents during the period from 1700 to 1821 A.D. It will discuss the composition of the class structures with all of its various members, levels and derivations.
6. LENGTH OF TIME NEEDED: One year.
7. WHAT WILL HAPPEN IF NOT UNDERTAKEN: Failure to implement this project will result in the lack of important interpretive information required to give the visiting public a better understanding of the Spanish colonial frontier.
8. WHAT ARE THE ALTERNATIVES: No action.
9. PERSONNEL: By contract.
10. ADMINISTRATION AND LOGISTICS:

<u>Funding</u>	<u>Year in Program Sequence</u>				
	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>	<u>5th</u>
GRAND TOTAL:	3,000				
Funds available in park base:	0				
Funds requested from Regional Office:	3,000				
 <u>On Form</u>	<u>Date Submitted</u>				
10-237	October 15, 1976				
11. MANAGEMENT AND ASSESSMENT NEEDS: None.
12. REFERENCES AND CONTRACTS:

Bernard L. Fontana, PhD; Arizona State Museum, Tucson, AZ.

Rev. Charles Polzer, S.J., PhD; 2844 E. First St., Tucson, AZ.

13. DATE OF ORIGINAL SUBMISSION: June 30, 1974.

14. DATE OF THIS REVISION: December 1982.

sulfur dioxide into the monument's air. Because of the diluted state of these pollutants and lack of air stagnation, these factors do not have a significant effect on the area's air quality.

II. Influences on Management - Air Quality Related Values

A. Legislative and Administrative Constraints

The Clean Air Act as amended in 1977 was established by Congress after determination that the nation's air quality was rapidly deteriorating, and that Federal leadership and financial assistance were needed to cope with the problem. The stated purpose of the Act is to protect and enhance the nation's air quality. The primary Federal responsibility is to provide technical and financial assistance to State and local governments, who have the responsibility to develop and execute air pollution prevention and control programs.

Section 118 of the Act indicates that all Federal facilities must comply with all Federal, state, interstate, and local requirements in the same manner and to the same extent as any nongovernmental entity.

Part C of the Clean Air Act is entitled "Prevention of Significant Deterioration of Air Quality". Among the stated purposes of this part is "to preserve, protect, and enhance the air quality in national parks, national wilderness areas, national monuments, national seashores, and other areas of special national or regional natural, recreational, scenic, or historic value".

As part of this preservation effort, the Clean Air Act created three classifications of varying degrees of restriction of allowable air quality deterioration. Under the terms of this classification Tumacacori National Monument was designated Class II and will not be recommended for upgrading to Class I status in the near future, as a review of the area has not identified air quality related values of sufficient importance to require protection beyond that afforded by Class II status in order to realize the purpose for which the area was set aside. Under the Class II designation, the maximum allowable increase of particulate matter and sulfur dioxide has been established as follows:

Pollutant

Particulate matter:	Maximum allowable increase (micrograms per cubic meter)
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Annual geometric mean	.19
Twenty-four-hour maximum	.37

Sulfur dioxide:

Annual arithmetic mean	.20
Twenty-four-hour maximum	.91
Three-hour maximum	512

Increments of deterioration for other pollutants, including carbon monoxide, photochemical oxidants, and nitrogen oxides are to be established by the



